

### **REMARKS**

In the Office Action, the Examiner rejected claims 1-55. However, in view of the amendments set forth above and the remarks set forth below, Applicants respectfully submit that pending claims 1-55 are allowable in their present form. Upon entry of the amendments, claims 1-55 will remain pending in the present patent application. Applicants respectfully request reconsideration of the above-referenced application in view of the following remarks.

### **Rejections Under 35 U.S.C. § 102**

In the Office Action, the Examiner rejected claims 1-55 under 35 U.S.C. § 102(b) as anticipated by Zhao et al. (U.S. Patent No. 6,683,934). Applicants respectfully traverse this rejection.

### ***Legal Precedent***

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

***Features of Claims 1, 15, 26, 36, 45, and 48, and Claims Depending Therefrom Missing from the Cited Reference***

Embodiments of the present technique are directed to *automatic* selection of *log-subtraction* decomposition parameters for dual energy chest radiography. Accordingly, amended independent claims 1, 15, and 26 recite, *inter alia*, “obtaining a default *log-subtraction* decomposition parameter” and “*automatically* providing a soft tissue *log-subtraction* decomposition parameter and a bone *log-subtraction* decomposition parameter by modifying the default *log-subtraction* decomposition parameter based on the patient size and the filtration setting.” (Emphasis added). Independent claim 36 recites, *inter alia*, “*automatically* providing a soft tissue *log-subtraction* decomposition parameter and a bone *log-subtraction* decomposition parameter by modifying the default *log-subtraction* decomposition parameter based on a patient size and a filtration setting.” (Emphasis added). Independent claim 45 recites, *inter alia*, “an *automatic* decomposition parameter selection module adapted to compute soft tissue and bone *log-subtraction* decomposition parameters by modifying a *log-subtraction* default composition parameter based on a patient size category and a filtration setting of the collimator” (emphasis added). Further, independent claim 48 recites, *inter alia*, “*automatically* providing a soft tissue *log-subtraction* decomposition parameter and a bone *log-subtraction* decomposition parameter based on a default *log subtraction* decomposition parameter, a patient size, and a collimator filtration setting” (emphasis added).

On a preliminary note, the equations cited by the Examiner throughout the prosecution history are not related to a *log-subtraction* technique, as presently claimed. Specifically,  $\Phi_s$  and  $\Phi_b$ , which are predefined rotation angles to obtain a soft-tissue image and a bone image, are not equivalent to the presently recited *log-subtraction* decomposition parameters. Equations (8) and (9) of the Zhao et al. reference, which utilize angles  $\Phi_s$  and  $\Phi_b$ , relate to a *material decomposition* method, and there is a distinct difference between *material decomposition* and *log-subtraction* methods and their related

parameters. In fact, this is supported in the Zhao et al. reference, which indicates that “[a] choice is made in step between subtraction processing (A) and material decomposition processing, shown respectively as alternative steps 3-A (322) and 3-B (324), in FIG. 3.” See Zhao et al., col. 7, lines 22-25. Accordingly, it is clear that the equations previously cited by the Examiner are related to *material decomposition* and fail to disclose *log-subtraction decomposition* parameters.

Additionally, the Zhao et al. reference fails to disclose all of the presently recited features of claims 1, 15, 26, 36, 45, and 48. For example, rather than teaching that a default *log-subtraction* decomposition parameter is obtained and that a soft tissue *log-subtraction* decomposition parameter and a bone *log-subtraction* decomposition parameter are automatically provided by modifying the default log-subtraction *decomposition parameter* based on a patient size and filtration setting, the Zhao et al. reference merely discloses the following:

The weighting factors may be determined empirically by *observing* the quality of resulting images, e.g., for soft-tissue images, *the weighting factor is adjusted until bone structure disappears in the resulting soft-tissue image and, similarly, is adjusted to make the soft-tissue disappear* for producing a resulting bone/calcification image.

Zhao et al., col. 7, lines 46-52 (emphasis added).

The Zhao et al. reference is not directed to *automatic* provision of soft-tissue and bone log-subtraction decomposition parameters, as generally set forth in the present claims. Indeed, the procedure set forth in the Zhao et al. reference with respect to the log-subtraction method is *interactive* trial and error, not *automatic*. As set forth above, the Zhao et al. reference, specifically states that weighting factors are determined empirically by *observing* the quality of resulting images and *adjusting* based on the observations. Further, the lack of automation in the Zhao et al. reference is made especially clear in that

equations similar to equations (6) and (7) of the Zhao et al. reference are utilized and improved upon by the presently claimed technique. For example, page 21 of the present application discusses the use of equations similar to equations (6) and (7) of the Zhao et al. reference. However, the present application is distinguished from the Zhao et al. reference because the present application includes *improvements* upon these basic equations. Specifically, the present application includes equations that provide for automation. For example, page 20, lines 5-20 of the present application discuss computation of “decomposition parameters WS and WB *automatically without any direct user intervention.*” (Emphasis added).

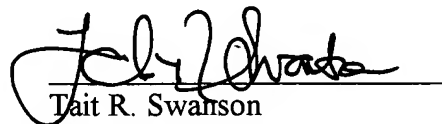
In view of the present amendments and the deficiencies in the cited reference, as set forth above, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102 and allowance of claims 1-55.

### **Conclusion**

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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